Guidelines for Real Time GNSS Networks (RTN)

Administration

RTN Administration

- Efficiently operates the various components of the network
  - Receivers
  - Servers
  - Communication networks
- Provides users with the information needed to utilize the network

RTN Administration

- Resources
  - Hardware infrastructure
  - Communication networks
  - CORS
- People
  - Users
  - Administration staff to provide
    - Helpful support to users
    - Partnership with IT professionals

RTN Administration

- Key component of administration staff is the system administrator
  - Operates and maintains the RTN computer network
  - Distributes the GNSS information to the network's users in an efficient manner

RTN Administration

- Administrator abilities
  - Support and maintain computer servers and communication links
  - Ability to respond to service outages
    - User reported problems
    - Network problems
  - Helpful to have a background in geodesy and satellite positioning

RTN Administration

- RTN Administration Components
  - System Administrator
  - Communication
  - IT Partners
    - IT security
    - Firewall issues
    - Lightning protection
    - Power system backup

RTN Administration

- Latency
  - Bandwidth
  - Transmission medium
  - Router and switch performance
  - Firewall
  - Wireless network voice/data traffic

RTN Administration

- Reference Station Datum
  - Benefits of using a reference datum that is consistent with the datum used by NGS:
    - Easy to verify
    - Consistent with National CORS
    - Can use OPUS to position RTN CORS

RTN Administration

- Reference Station Datum
  - Ramifications of using a datum that differs from the datum utilized by NGS
    - OPUS and RTN solutions would be based on different reference datums:
      - OPUS could not be used to check RTN solutions
      - RTN could not be used to check OPUS solutions
    - Could create confusion with users

RTN Administration

- Reference Station Datum
  - Coordinates can be determined from a variety of sources
    - OPUS
      - Rapid solution
      - Minimum of five (5) days of twenty-four (24) data sets
      - Minimum of three (3) National CORS that are within 250 km of your RTN
      - Review the sixty (60) day solution of each National CORS used in the solution to ensure that each CORS is stable and operating within tolerances
      - Carefully analyze the OPUS results

RTN Administration

- Adjustments
  - Minimum of five (5) days of twenty-four (24) hour datasets should be used
  - Commercial adjustment packages
  - NGS ADJUST
- Advantages
  - Distributes errors
  - Includes connection to NSRS
- Disadvantages
  - Takes more time

RTN Administration

- Connection to NSRS
  - The minimum number of National CORS sites in the RTN should be the larger of the following two figures: 3 sites or 10% of the sites
  - Recommend local static surveys be performed to connect RTN CORS with local NSRS passive stations
    - Provide information to develop local accuracies
  - See section on “Recommendations for Obtaining and Maintaining Station Coordinates Consistent with NAD 83 and ITRS”

RTN Administration

- Connection to NAVD88
  - Should be completed before the CORS antenna is installed
  - May be completed afterwards if an offset leveling plate had been installed immediately below the antenna
- Field techniques
  - Geodetic leveling
  - Trigonometric leveling
  - NGS -58 survey

Questions?